

Appl. No. 09/508,405

AMENDMENTS TO THE CLAIMS

1-30. Cancelled.

31. (Cancelled) A process for preparing linear high melt strength propylene homopolymers and copolymers, comprising the steps of

- ~~— subjecting propylene and optionally other olefins to polymerization in a plurality of polymerization reactors connected in series wherein said reactors are selected from the group consisting of loop reactors and gas phase reactors and wherein said reactors comprise at least one loop reactor and at least one gas phase reactor,~~
 - ~~— employing different amounts of hydrogen as a molar mass modifier in at least two of the reactors, and~~
 - ~~— carrying out the polymerization reaction in the presence of a catalyst system which catalyzes the formation of a high molar mass polymerization product having a MFR₂ of less than 0.1 g/10 min and a low or medium molar mass polymerization product having a MFR₂ of more than 0.5 g/10 min,~~
- ~~wherein the second reactor is a gas phase reactor, wherein propylene and optionally comonomers are polymerized in a gaseous reaction medium, and~~
- ~~wherein an overhead stream or part of it is recirculated to the second reactor.~~

32. (Previously Presented) A process for preparing linear high melt strength propylene homopolymers and copolymers, comprising the steps of

- subjecting propylene and optionally other olefins to polymerization in a plurality of polymerization reactors connected in series wherein said reactors are selected from the group consisting of loop reactors and gas phase reactors and wherein said reactors comprise at least one loop reactor and at least one gas phase reactor,
- employing different amounts of hydrogen as a molar mass modifier in at least two of the reactors, and
- carrying out the polymerization reaction in the presence of a catalyst system which catalyzes the formation of a high molar mass polymerization product having a MFR₂

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of less than 0.1 g/10 min and a low or medium molar mass polymerization product having a MFR₂ of more than 0.5 g/10 min,
wherein the second polymerization product is fed into a third reactor and propylene is subjected to a third polymerization reaction to produce a third polymerization product.

33. (Previously Presented) The process according to claim 32, wherein the third polymerization reaction is carried out in a gas phase reactor in the presence of comonomers which give the third polymerization product properties of improved impact strength.
34. (Previously Presented) The process according to any one of claims 32 or 33, wherein the product of polymerization reaction is transferred to a fourth polymerization reaction zone.
35. Cancelled
36. (Previously Presented) A process for preparing linear high melt strength propylene homopolymers and copolymers, comprising the steps of
- subjecting propylene and optionally other olefins to polymerization in a plurality of polymerization reactors connected in series wherein said reactors are selected from the group consisting of loop reactors and gas phase reactors and wherein said reactors comprise at least one loop reactor and at least one gas phase reactor,
 - employing different amounts of hydrogen as a molar mass modifier in at least two of the reactors, and
 - carrying out the polymerization reaction in the presence of a catalyst system which catalyzes the formation of a high molar mass polymerization product having a MFR₂ of less than 0.1 g/10 min and a low or medium molar mass polymerization product having a MFR₂ of more than 0.5 g/10 min,
- wherein
- propylene and optionally other olefins are polymerized in a loop reactor at a pressure of 25 to 80 bar, at a temperature of 60 to 100°C to provide the low or medium molar mass polymerization product having a MFR₂ of more than 0.5 g/10 min,

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- the polymerization product of the loop reactor is recovered and conducted to a flash tank, wherein an overhead product containing hydrogen and non-reacted propylene is separated from a bottom product containing polymerized solids,
- the bottom product is conducted to a gas phase reactor,
- additional propylene and optionally other olefins are fed to the gas phase reactor,
- the additional propylene and optionally other olefins are subjected to polymerization at a pressure of 20 bar or more to provide the high molar mass polymerization product having a MFR_2 of less than 0.1 g/10 min,
- the polymerization product of the gas phase reactor is recovered and conducted to a flash tank, wherein the pressure of the product is reduced to produce an overhead product containing hydrogen and non-reacted propylene and a bottom product primarily containing polymerized solids,
- at least a part of the overhead product is recycled to the gas phase reactor,
- polypropylene polymer or copolymer is recovered from a part of the bottom product of the flash tank and

wherein at least a part of the overhead product is recycled to the loop reactor.

37. (Original) The process according to claim 36, wherein the overhead product is conducted to the gas phase reactor after at least a partial separation of hydrogen.

38-40. Cancelled

41. (Previously Presented) A process for preparing linear high melt strength propylene homopolymers and copolymers, comprising the steps of

- subjecting propylene and optionally other olefins to polymerization in a plurality of polymerization reactors connected in series wherein said reactors are selected from the group consisting of loop reactors and gas phase reactors and wherein said reactors comprise at least one loop reactor and at least one gas phase reactor,
- employing different amounts of hydrogen as a molar mass modifier in at least two of the reactors, and

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- carrying out the polymerization reaction in the presence of a catalyst system which catalyzes the formation of a high molar mass polymerization product having a MFR_2 of less than 0.1 g/10 min and a low or medium molar mass polymerization product having a MFR_2 of more than 0.5 g/10 min, which is nucleated for higher crystallization temperature, stiffness and optical properties.

42. Cancelled